

Amendments

Applicants have amended claim 1 to clarify that the contact holder 4 is locked to the connector body 2 of the other connector. Claim 6 is similarly amended.

Claim Rejections Under 35 U.S.C. § 112, first paragraph

Claims 1-9, 11, and 12 are rejected under 35 U.S.C. § 112, first paragraph as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The Office Action asserts that “disclosure and drawings do not provide any information regarding interlocking the contact holder and the contact of other contact elements. According to specification, the locking means are disclosed for locking the contact holder to the body of other contact element.”¹ Applicants have amended claim 1 to clarify that the contact holder 4 is locked to the connector body 2 of the other connector. Claim 6 is similarly amended. For these reasons, Applicants respectfully request withdrawal of the rejections.

Claim Rejections Under 35 U.S.C. § 112, first paragraph

Claim 6 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out distinctly claim the subject matter which Applicant regards as the invention.

The Office Action asserts that the term “the connector element” is unclear, since the respective independent claim 1 claims “first and second connector elements.”² Applicants have amended claim 6 by replacing the reference to “the connector” with a reference to “the other connector,” thereby clarifying that it is the engagement of the contact holder of one connector element with the body of the other connector element that is intended. Note that this differs from the interpretation of claim 6 which the Office Action has currently adopted. For these reasons, Applicants respectfully request withdrawal of the rejections.

Claim Rejections Under 35 U.S.C. § 102

Claims 1 and 5 are rejected under 35 U.S.C. § 102(b) as being anticipated by *Bac*, U.S. Patent No. 3,360,764. Applicants respectfully traverse the rejections.

Applicants agree with the Office Action’s assessment in so far as *Bac* discloses a connector comprising two interchangeable connector elements, (A, B), at least one of which (A) supports a first contact (13) and a displaceable contact holder (15.21) carrying second (25) and third (26) contacts. However, the Office Action goes on to assert that the remaining features of claim 1 are also known from *Bac*. Applicants respectfully dispute this assertion.

¹ Paper 6, pg. 2.

² Paper 6, pg. 2.

In the Bac reference, during connection, there is nothing to prevent the first and second contacts becoming interconnected before the third contact is connected to a contact of another connector. Furthermore, during disconnection there is nothing to prevent the third contact becoming disconnected from a contact of another connector prior to the first contact being disconnected from the second contact.

In contrast, Applicant's claimed subject matter ensures this sequence of events as set out in claim 1. Specifically, the first and second contacts cannot mate until the third contact 34 has mated with a contact 15 provided by another connector. This is because the third contact 34 must mate with a contact 15 provided by another connector such that the other connector forces the slider 20 back against spring 21, and thereby releases the lock ball 31, to allow the sliding contact holder 30 to move, and thereby to allow the first contact 36 and the second contact 35 to meet. There is no such mechanism disclosed in the Bac document.

Similarly, during the disconnection of the two connectors, the third contact 34 cannot initially be removed from the contact 15 of the other connector, because the lock balls 33 prevent separation of the sliding contact holders 4 from the female connector body 2. A third contact 34 can only be removed from the contact 15 of the other connector after the first contact 36 and the second contact 35 have been pulled apart, thereby allowing the lock balls 33 to move radially outwards, and thereby allowing the connectors to be separated.

Thus, in accordance with claim 1, the connectors are formed such that "on interengagement the contact holder is displaced from the first position to the second position after the third contact is interconnected" and are also formed such that "on disengagement the contact holder is displaced from the second to the third position, the contact being arranged such that on disengagement the first and the second contacts separate before the third contact. . . ." In contrast, Bac fails to disclose a connector which ensures this sequence of events. As described in the introduction of the present Application, this sequence of events is crucial for reasons of safety.³

Claim Rejections Under 35 U.S.C. § 103

Claims 2-4, 6-8, 11 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bac, U.S. Patent No. 3,360,764. Applicants respectfully traverse the rejections.

Claim 2-4, 6-8, 11, and 12 depend from allowable claim 1 and are therefore also allowable. For this reason, Applicants respectfully request withdrawal of the rejections.

With regard to the Office Action's comments on obviousness under 35 U.S.C. § 103, the Bac document is concerned with the solution of a very different problem, namely the provision of a connector which can withstand the intense heating action which is inflicted upon connectors used in the spacecraft. Such heating can be caused either by friction against the ambient atmosphere or even by flames from the propellant.⁴ As shown above, Applicant's claimed subject matter is directed to solving a very different problem from that of the Bac document, namely the provision of a connector in accordance with the EXD

³ See Specification pg. 1, para. 3.

⁴ Col. 2, lines 1-10.

intended use.
this limitation

standard.⁵ In these circumstances, the sequence of events as set out above is of crucial importance. This is not the case in the situation addressed by Bac. There is no teaching or suggestion in the Bac document providing means to ensure that the sequence of events as set out in claim 1 is ensured. For these additional reasons, Applicants respectfully request withdrawal of the rejections.

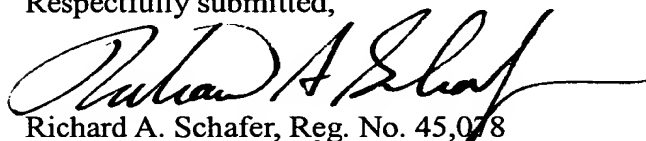
CONCLUSION

The prior art made of record, but not specifically cited, is not believed to disclose any significant information that is not sufficiently discussed in this Amendment.

It is respectfully submitted that all issues and rejections have been adequately addressed and that all claims as amended and pending following entry of this Amendment are now allowable and that the case should be advanced to issuance.

If the Examiner has any questions or wishes to discuss the claims as amended, the Examiner is encouraged to call the undersigned or John F. Luman at the telephone number indicated below.

Respectfully submitted,



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⁵ Specification, pg. 1, para. 3.

ATTACHMENT A

Cleaned-Up Version of Amended Claims (as of 10/2/2002)

X/ 1. A connector for interconnecting or mutually isolating two or more circuits, comprising first and second interengageable connector elements each of which is connected in use to a respective circuit and at least one of which supports a first contact connected to the respective circuit and a displaceable contact holder carrying interconnected second and third contacts, the contact holder being displaceable between a first position in which the first and second contacts are separated and a second position in which the first and second contacts are interconnected, wherein the connector elements are formed such that on interengagement the contact holder is displaced from the first to the second position after the third contact is interconnected with a contact of the other connector element, and such that on disengagement the contact holder is displaced from the second to the first position, the contacts being arranged such that on disengagement the first and second contacts separate before the third contact is separated from the said contact of the other connector element and such that when separated the first and second contacts are located within a closed chamber defined within the said at least one connector element, means being provided for locking the or each contact holder to the said contact of the other connector elements unless the first and second contacts are separated.

2. A connector according to claim 1, wherein each connector element supports a respective first contact and a respective displaceable contact holder carrying interconnected second and third contacts such that on interengagement of the connector elements the third contacts are interconnected.

3. (Amended) A connector according to claim 1, wherein means are provided to prevent the contact holder from being blown out of the associated connector element.

4. A connector according to claim 3, wherein the preventing means comprises a pin ^{to body of} received in a slot formed in the contact holder. ^{are provided to prevent extended in}

5. (Amended) A connector according to claim 1, wherein the contact holder is ^{provided for} slidable in a bore such that the closed chamber is defined between the contact holder and walls of the bore. ^{perpendicular to a mating direction}

6. (Amended) A connector according to claim 1, wherein the means for locking the contact holder to the said contact of the other connector elements comprise one or more locking balls which are retained in locking engagement between the connector element and the contact holder unless the contact holder is in the first position.

7. (Amended) A connector according to claim 1, comprising means for locking the contact holder in the first position when the contact elements are separated.

8. (Amended) A connector according to claim 7, wherein the locking means maintain the contact holder in the first position unless the contact elements are interengaged.

9. (Amended) A connector according to claim 8, wherein the locking means comprise a spring-biased slider displaceable as a result of interengagement of the connector elements from one position in which it retains one or more locking balls in locking engagement between the connector element and the contact holder with the contact holder in the first position and a further position in which the locking ball is released and the contact holder is displaceable to the second position.

10. (Cancelled).

11. A connector according to claim 2, wherein means are provided to prevent each contact holder from being blown out of the associated connector element.

12. A connector according to claim 11, wherein the preventing means comprises a pin received in a slot formed in the contact holder.

ATTACHMENT B

Marked-Up Version Of Amended Claims (as of 10/2/2002)

1. (Once Amended) A connector for interconnecting or mutually isolating two or more circuits, comprising first and second interengageable connector elements each of which is connected in use to a respective circuit and at least one of which has a body and supports a first contact connected to the respective circuit and a displaceable contact holder carrying interconnected second and third contacts, the contact holder being displaceable between a first position in which the first and second contacts are separated and a second position in which the first and second contacts are interconnected, wherein the connector elements are formed such that on interengagement the contact holder is displaced from the first to the second position after the third contact is interconnected with a contact of the other connector element, and such that on disengagement the contact holder is displaced from the second to the first position, the contacts being arranged such that on disengagement the first and second contacts separate before the third contact is separated from the said contact of the other connector element and such that when separated the first and second contacts are located within a closed chamber defined within the said at least one connector element, means being provided for locking the ~~or each~~ contact holder to the [said contact] body of the other connector element, such that the third contact is connected to the contact of the other connector elements unless the first and second contacts are separated.

6. (Amended) A connector according to claim 1, wherein the means for locking the contact holder to the [said contact of] body of the other connector elements comprise one or more locking balls which are retained in locking engagement between the other connector element and the contact holder unless the contact holder is in the first position.